IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appln. No:	10/574,332
Applicant:	Daniel Burri et al.
Filed:	March 31, 2006
Title:	External Rotor Drive
T.C./A.U.:	2854
Examiner:	David H. Banh
Confirmation No.:	5883
Docket No.:	SSM-551US

AMENDMENT UNDER 37 C.F.R. § 1.116

Expedited Procedure

Mail Stop AF
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Responsive to the Final Office Action dated February 12, 2009, please amend the above-identified application as follows:

☐ **Amendments to the Specification** begin on page of this paper.

☒ **Amendments to the Claims** are reflected in the listing of claims which begins on page 2 of this paper.

☐ **Amendments to the Drawings** begin on page of this paper and include an attached replacement sheet(s).

☐ **Amendments to the Abstract** are on page of this paper. A clean version of the Abstract is on page of this paper.

☒ **Remarks/Arguments** begin on page 5 of this paper.

Amendments to the Claims: This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

Claims 1-16 (Canceled)

17. (Currently Amended) A rotation body for a printing machine, comprising:

a stator including at least one stator winding; and

a rotor including at least one permanent magnet and positioned for rotation relative to the stator, the rotor extending from a first bearing to ~~supported by~~ a ~~pair of~~second, spaced apart bearings and the at least one permanent magnet provided over substantially all of the area along the longitudinal axis of the rotor between the first and second bearings,

wherein current flowing through the stator winding interacts with the at least one permanent magnet and generates a torque acting on the rotor.

18. (Previously Presented) The rotation body according to claim 17, wherein at least two stator windings are provided at axially offset points on the stator.

19. (Previously Presented) The rotation body according to claim 17, wherein the at least one stator winding generates a magnetic field for driving the rotor over at least half of an axial length of the rotor.

20. (Previously Presented) The rotation body according to claim 17, wherein the at least one stator winding is distributed over approximately an entire axial length of the stator.

21. (Previously Presented) The rotation body according to claim 17, wherein the at least one stator winding is provided on an outer surface of the stator.

22. (Previously Presented) The rotation body according to claim 17, wherein the rotor is a cylinder shell.

23. (Previously Presented) The rotation body according to claim 17, wherein the rotor is a cylinder body comprising a blind hole.

24. (Currently Amended) The rotation body according to claim 17, wherein the rotor is mounted on the stator by at least one of the bearings extending between the rotor and the stator, at least one of the bearings extending between the rotor and an external retainer, or at least ~~a~~ the first of the bearings extending between the rotor and the stator and at least ~~a~~ the second of the bearings extending between the rotor and the external retainer.

25. (Previously Presented) The rotation body according to claim 17, further comprising a cylinder body or roller body which is supported on the rotor and fixed thereto by a non-positive frictional lock, a positive lock or by a combination of a non-positive frictional lock and a positive lock.

26. (Previously Presented) The rotation body according to claim 17, further comprising a cooling system for cooling at least a partial area of the stator.

27. (Previously Presented) The rotation body according to claim 17, wherein the at least one permanent magnet is annular, rod-shaped or a combination of annular and-rod shaped.

28. (Previously Presented) The rotation body according to claim 17, wherein the at least one permanent magnet is provided on a rotor casing inner surface.

29. (Previously Presented) The rotation body according to claim 17, wherein the rotor supports or defines a deflecting cylinder, a drawing roller, a ductor, a central cylinder, a steel cylinder, a printing blanket cylinder, a form cylinder, a plate cylinder, a rubber cylinder, a knife cylinder, a collecting cylinder, a cutting cylinder, an inking roller, or dampening roller.

30. (Previously Presented) The rotation body according to claim 17, wherein the rotor is used in a folding apparatus or in a reel changer.

31. (Previously Presented) A printing machine drive comprising a rotation body according to claim 17.

32. (Previously Presented) The printing machine drive according to claim 31, further comprising a control device configured to one or more of a voltage, a strength of a current and a frequency of a current flowing in the at least one stator winding.

33. (Previously Presented) The printing machine drive according to claim 31, further comprising an angle sensor for measuring a rotary position of the rotor.

34. (Previously Presented) A rotation printing machine comprising rubber blanket cylinders and counter printing cylinders that together form printing points, and further comprising plate cylinders which are mechanically coupled in pairs with the rubber blanket cylinders into cylinder groupings, wherein each cylinder grouping is driven by one or more of the plate cylinder, rubber blanket cylinder or the counter printing cylinder including a rotation body according to claim 17.

35. (Previously Presented) The rotation body according to claim 17 wherein the rotation body defines a bearing for a cylinder or a roller of a printing machine.

36. (Currently Amended) A method of driving a cylinder or roller of a printing machine, the method comprising:

providing at least one rotation body comprising:

a stator supported by the printing machine and including at least one stator winding; and

a rotor including at least one permanent magnet and positioned for rotation relative to the stator, the rotor extending from a first bearing to ~~supported by a pair of~~second, spaced apart bearings and the at least one permanent magnet provided over substantially all of the area along the longitudinal axis of the rotor between the first and second bearings;

positioning the cylinder or roller about the rotor; and

selectively providing current through the stator winding.

Remarks/Arguments:

Claim Rejections Under 35 U.S.C. §102 and §103

Claims 17, 20, 22, 23 and 28 stand rejected under 35 U.S.C. §102 as anticipated by U.S. Publication No. 2003/0222526 (Matsunobu et al.). Claims 17-21, 24, 27 and 36 stand rejected under 35 U.S.C. §102 as anticipated by U.S. Publication No. 2001/0030471 (Kanebako).

Claim 22 stands rejected as unpatentable over Kanebako in view of U.S. Publication No. 2002/0109422 (Hatton). Claim 23 stands rejected as unpatentable over Kanebako in view of Russian Publication No. RU2159282C2 (Tumchenok). Claim 25 stands rejected as unpatentable over Kanebako in view of U.S. Patent No. 6,786,069 (Ochi). Claim 26 stands rejected as unpatentable over Kanebako in view of U.S. Publication No. 2003/0173837 (Fujigaki et al.). Claim 28 stands rejected as unpatentable over Kanebako in view of U.S. Publication No. 2003/0123375 (Uno et al.). Claim 29 stands rejected as unpatentable over Kanebako in view of U.S. Patent No. 6,397,441 (Passini et al.). Claim 30 stands rejected as unpatentable over Kanebako in view of U.S. Patent No. 4,863,421 (Loebach). Claims 31, 32 and 35 stand rejected as unpatentable over Kanebako in view of U.S. Patent No. 4,930,415 (Hara et al.). Claim 33 stands rejected as unpatentable over Kanebako in view of Hara further in view of U.S. Patent No. 6,424,114 (Komatsu). Claim 34 stands rejected as unpatentable over Kanebako in view of U.S. Patent No. 5,950,538 (Puschnerat). Applicants traverse these rejections.

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." M.P.E.P. §2131 *citing Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987).

"To establish a prima facie case of obviousness, ... the prior art reference (or references when combined) must teach or suggest all the claim limitations." M.P.E.P. §2143. Additionally, as set forth by the Supreme Court in KSR Int'l Co. v. Teleflex, Inc., No. 04-1350 (U.S. Apr. 30, 2007), it is necessary to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the prior art elements in the manner claimed.

Independent claim 17 recites "[a] rotation body for a printing machine, comprising: a stator including at least one stator winding; and a rotor including at least one permanent magnet and positioned for rotation relative to the stator, the rotor extending from a first

bearing to a second, spaced apart bearing and the at least one permanent magnet provided over substantially all of the area along the longitudinal axis of the rotor between the first and second bearings, wherein current flowing through the stator winding interacts with the at least one permanent magnet and generates a torque acting on the rotor."

With the claimed configuration, the torque is generated uniformly over the length of the rotor between the bearings and minimizes stress that may be generated by torque acting only on a part of the rotor.

The Office Action cites to Figure 1 of Matsunobu et al. as teaching a stator 20, a rotor 32 including permanent magnets 36 and bearings 42, 44. As shown in Figure 1, the rotor 32 does not extend from one of the bearings 42 to the other of the bearings 44. Instead, as explained in paragraph [0034], "[t]he shaft 38 is held rotatably by bearings 42 and 44. The bearings 42 and 44 are held by end brackets 46 and 48 fixed on the sides of the housing 26." Masunobu et al. does not teach or suggest a rotor extending from a first bearing to a second bearing as recited in claim 17. If it is asserted that the shaft 38 is part of the rotor, then the permanent magnet 36 does not extend over substantially all of the area along the longitudinal axis of the rotor between the first and second bearings as recited in claim 17. Matsunobu et al. fails to teach or suggest each limitation of the claimed invention.

The Office Action cites to Figure 2 of Kanebako as teaching a rotor 2a and stator 3a with bearings 5a and 5b supporting the rotor 2a. In this interpretation of Kanebako, the Office Action ignores the remaining portion of the rotor, namely rotor portion 2b. Kanebako explains in paragraph [0034] that the rotor thereof comprises more than rotor 2a. "The rotors 2a and 2b are formed from main body sections composed of a magnetic material, and provided on a rotor shaft 8 composed of a magnetic material at locations spaced a specified distance from one another. The main body sections forming the rotors 2a and 2b and the rotor shaft 8 are both formed from a magnetic material. Therefore, the main body sections composing the rotors 2a and 2b also define part of the rotor shaft 8." (emphasis added).

Using this interpretation of Kanebako, i.e., only rotor portion 2a is considered equivalent to the claimed rotor, then as shown in Figure 2 of Kanebako, the rotor 2a does not extend from a first bearing to a second, spaced apart bearing as recited in claim 1.

If alternatively Kanebako is interpreted such that the rotor includes rotor portions 2a and 2b, then the permanent magnets are not provided over substantially all of the area along the longitudinal axis of the rotor between the bearings as recited in claim 17, but instead only over a portion of the rotor, namely, rotor 2a, which may generate stress due to an uneven torque.

With respect to the embodiment illustrated in Figures 11 and 12 of Kanebako, the rotor body 50 is supported by roller bearings at each end thereof (see Figure 11). Permanent magnets 33 and 34 cover only a small portion of the roller body 50 between these roller bearings. Again, such an arrangement may generate stress on the rotor body due to uneven torque.

It is respectfully submitted that Kanebako fails to teach or suggest each limitation of the claimed invention. The remaining cited references do not overcome the shortcomings of Kanebako.

It is respectfully submitted that independent claim 17 is in condition for allowance. Claims 18-35 each depend from claim 17 and are therefore allowable for at least their dependency on allowable claim 17.

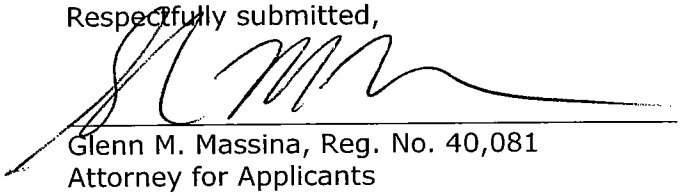
Similar to independent claim 17, independent claim 36 recites "[a] method of driving a cylinder or roller of a printing machine, the method comprising: providing at least one rotation body comprising: a stator supported by the printing machine and including at least one stator winding; and a rotor including at least one permanent magnet and positioned for rotation relative to the stator, the rotor extending from a first bearing to a second spaced apart bearing and the at least one permanent magnet provided over substantially all of the area along the longitudinal axis of the rotor between the first and second bearings; positioning the cylinder or roller about the rotor; and selectively providing current through the stator winding."

As explained above neither Matsunobu et al. or Kanebako teaches or suggests a rotor extending from a first bearing to a second spaced apart bearing and the at least one permanent magnet provided over substantially all of the area along the longitudinal axis of the rotor between the first and second bearings. It is respectfully submitted that independent claim 36 is in condition for allowance.

It is respectfully submitted that each of the pending claims is in condition for allowance. Early reconsideration and allowance of each of the pending claims are respectfully requested.

If the Examiner believes an interview, either personal or telephonic, will advance the prosecution of this matter, the Examiner is invited to contact the undersigned to arrange the same.

Respectfully submitted,



Glenn M. Massina, Reg. No. 40,081
Attorney for Applicants

GMM/

Dated: April 6, 2009

☒ P.O. Box 980
Valley Forge, PA 19482
(610) 407-0700

☐ P.O. Box 1596
Wilmington, DE 19899
(302) 778-2500

The Director is hereby authorized to charge or credit Deposit Account No. **18-0350** for any additional fees, or any underpayment or credit for overpayment in connection herewith.